

**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

In the Matter of:	)	
Closed Captioning of Video Programming	)	CG Docket No. 05-231
Telecommunications for the Deaf and	)	MB Docket No. RM-11065
Hard of Hearing, Inc. Reply Comment	)	Docket No. RM-11848

**Reply Comment on Petition for Declaratory Ruling and/or Rulemaking on Live Closed Captioning Quality Metrics and the Use of Automatic Speech Recognition Technologies**

**Telecommunications for the Deaf and Hard of Hearing, Inc. (TDI)  
National Association of the Deaf (NAD)  
Hearing Loss Association of America (HLAA)  
Association of Late-Deafened Adults (ALDA)  
Cerebral Palsy and Deaf Organization (CPADO)  
Deaf Seniors of America (DSA)  
California Coalition of Agencies Serving the Deaf and Hard of Hearing (CCASDHH)  
Deaf/Hard of Hearing Technology Rehabilitation  
Engineering Research Center (DHH-RERC)  
Twenty-First Century Captioning Disability and  
Rehabilitation Research Project (Captioning DRRP)  
Rehabilitation Engineering Research Center on Inclusive ICT (IT-RERC)**

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Samuelson-Glushko Technology Law & Policy  
Clinic (TLPC) • Colorado Law  
*Counsel to TDI*  
Blake E. Reid  
*Director*  
Tess M. Cartin  
Jake A. Stephens  
Kylie A. Thompson  
*Student Attorneys*  
[blake.reid@colorado.edu](mailto:blake.reid@colorado.edu)

**Telecommunications for the Deaf and Hard of Hearing, Inc. (TDI)**

Jan Withers, Board President • [Jan.Withers@TDIforAccess.org](mailto:Jan.Withers@TDIforAccess.org)

Claude Stout, Executive Director • [cstout@TDIforAccess.org](mailto:cstout@TDIforAccess.org)

PO Box 8009, Silver Spring, MD 20907

[www.TDIforAccess.org](http://www.TDIforAccess.org)

**National Association of the Deaf (NAD)**

Howard Rosenblum, Chief Executive Officer • [howard.rosenblum@nad.org](mailto:howard.rosenblum@nad.org)

*Contact:* Zainab Alkebsi • [zainab.alkebsi@nad.org](mailto:zainab.alkebsi@nad.org)

8630 Fenton Street, Suite 820, Silver Spring, MD 20910

301.587.1788

[www.nad.org](http://www.nad.org)

**Hearing Loss Association of America (HLAA)**

Barbara Kelley, Executive Director • [bkelly@hearingloss.org](mailto:bkelly@hearingloss.org)

Lise Hamlin, Director of Public Policy • [LHamlin@Hearingloss.org](mailto:LHamlin@Hearingloss.org)

7910 Woodmont Avenue, Suite 1200, Bethesda, MD 20814

301.657.2248

[www.hearingloss.org](http://www.hearingloss.org)

**Association of Late-Deafened Adults (ALDA)**

Richard Brown, President • [President@alda.org](mailto:President@alda.org)

8038 MacIntosh Lane, Suite 2, Rockford, IL 61107

815.332.1515

[www.alda.org](http://www.alda.org)

**Cerebral Palsy and Deaf Organization (CPADO)**

Mark Hill, President • [president@cpado.org](mailto:president@cpado.org)

14510 Homecrest Road, Unit #3008, Silver Spring, Maryland 20906

503.512.5066

[www.cpado.org](http://www.cpado.org)

**Deaf Seniors of America (DSA)**

Alfred Sonnenstrahl, President • [alsonny@icloud.com](mailto:alsonny@icloud.com)

5619 Ainsley Court, Boynton Beach, FL 33437

**California Coalition of Agencies Serving the Deaf and Hard of Hearing (CCASDHH)**

Sheri Farinha, Vice Chairperson • [sfarinha@norcalcenter.org](mailto:sfarinha@norcalcenter.org)

4044 N. Freeway Blvd, Sacramento, CA 95834

916.349.7500

**Rehabilitation Engineering Research Center on Technology for the Deaf and Hard of Hearing, Gallaudet University (DHH-RERC)**

**Twenty-First Century Captioning Disability and Rehabilitation Research Project (Captioning DRRP)**

Christian Vogler, PhD • [christian.vogler@gallaudet.edu](mailto:christian.vogler@gallaudet.edu)

800 Florida Avenue NE, TAP – SLCC 1116, Washington, DC 20002

**Rehabilitation Engineering Research Center on Inclusive ICT (IT-RERC)**

Gregg Vanderheiden, PhD, Director • [greggvan@umd.edu](mailto:greggvan@umd.edu)

Jonathan Lazar, Associate Director • [jlazar@umd.edu](mailto:jlazar@umd.edu)

Trace Research & Development Center • University of Maryland

4130 Campus Drive, College Park, MD 20742

## Summary

The petition under consideration in this proceeding contemplates two specific and straightforward requests: the long-term development and implementation of technology-neutral quality metrics for closed captioning of live video programming, and immediate guidance on the use of automatic speech recognition (ASR) under the Commission's quality standards and associated best practices. The record strongly supports the Commission taking action on both issues.

Qualitative comments by hundreds of consumers in response to an HLAA survey, coupled with hundreds of consumer comments in response to the petition, demonstrate a wide variety of issues and concerns with caption quality for live programming. Nearly all consumer commenters expressed the need for improved live captioning quality. The record and the HLAA study support each other, as consumers mentioned similar to identical concerns and issues in both contexts.

The record also indicates overwhelming support for implementation of technology-neutral metrics to better monitor the quality of captions. The best-practices approach does not provide a sufficient framework to hold the provision of captions to a standard sufficient for consumers who are deaf or hard of hearing to access video programming on equal terms.

Moreover, consumers should no longer be forced to bear the unfair burden of reporting widespread problems with caption quality. The complaint processes through the Commission and the individual broadcast stations are a cumbersome and ineffective mechanism to monitor caption quality. Although shifting this onus to caption providers by creating more stringent and neutral metrics will take some time, it is nevertheless imperative for the Commission to begin this process.

Further, the Commission should issue a declaratory rulemaking and/or expedited rule change to ensure that ASR techniques do not become more widely deployed without first providing a mechanism by which to gauge whether ASR techniques meet the Commission's current standards or best practices. The record raises the possibility that the use of ASR may be responsible in some cases for the decreased caption quality routinely observed by consumers. The Commission must address the deployment of ASR urgently to ensure that it develops with sufficient quality to serve the needs of consumers who are deaf or hard of hearing.

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## Discussion

The above-referenced Consumer Groups and accessibility researchers respectfully submit these replies in response to the Commission's Public Notice<sup>1</sup> regarding the July 31 petition for declaratory ruling and/or rulemaking filed in the above-referenced dockets ("PFR").<sup>2</sup> The Consumer Groups collectively advocate for heightened quality of closed captioning for the more than 48 million Americans who are deaf or hard of hearing. The accessibility researchers conduct studies regarding the accessibility of technology to consumers with disabilities.

The PFR urges the Commission to take two actions to address the flagging quality of closed captions for live television programming. First, the PFR asks the Commission to develop technology-neutral quality metrics for closed captioning.<sup>3</sup> Second, the PFR asks the Commission to provide immediate guidance on permissible uses of automatic speech recognition (ASR).<sup>4</sup>

The qualitative responses to the Summer 2019 HLAA survey, combined with the substantial volume of consumer comments filed, unquestionably demonstrate that significant captioning issues persist in the provision of live programming. Additionally, the record provides strong support for technology-neutral quality metrics to better ensure caption quality meets certain thresholds. The record also supports the Commission giving immediate guidance on whether and how ASR techniques can comply with the Commission's quality standards and best practices.

### **I. The vast record developed in response to the PFR demonstrates that consumers who are deaf or hard of hearing are dissatisfied with the quality of captions for live television.**

In July, the Hearing Loss Association of America (HLAA) conducted a survey to gauge the experience and satisfaction of consumers with the quality of closed captioning.<sup>5</sup> Following the

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<sup>1</sup> *Request for Comment on TDI et al Caption Quality Petition*, Public Notice, Docket No. 05-231, 34 FCC Rcd. 7198 (2019), <https://www.fcc.gov/document/request-comment-tdi-et-al-caption-quality-petition>.

<sup>2</sup> *Petition for Rulemaking of TDI*, Docket No. 05-231, RM 11-065 (July 31, 2019) ("PFR"), <https://www.fcc.gov/ecfs/filing/10801131063733>.

<sup>3</sup> PFR at 14.

<sup>4</sup> *Id.* at 16.

<sup>5</sup> PFR at Appendix.

survey, the Twenty-First Century Captioning and Rehabilitation Project (DRRP) conducted a qualitative analysis of the open-ended responses submitted by the survey participants. The DRRP analysis categorized the participants' various concerns regarding about closed captioning of live video programming. The analysis demonstrated that the quality of closed captioning is severely lacking across the board and supports both the overall PFR and the sentiments expressed by the nearly 300 consumer comments filed in response to the PFR. The HLAA survey analysis and the consumer comment record show overwhelming support for improved caption quality.

**A. The DRRP analysis of qualitative responses to the HLAA survey demonstrates the presence of significant quality problems with live captioning.**

The DRRP submitted a detailed analysis of the qualitative textual responses in the July 31, 2019, HLAA survey of over nine-hundred deaf and hard of hearing consumers' experiences with live caption quality.<sup>6</sup> Supplementing the PFR's analysis of the survey's quantitative responses,<sup>7</sup> the DRRP analysis examined the 534 survey takers who filled in qualitative textual responses.

The DRRP analysis highlights a wide range of problems across live broadcast captioning, as well as the inconsistencies among users.<sup>8</sup> While some consumers describe their caption quality as generally good, many more describe their experiences with captioning as only adequate, poor, or terrible.<sup>9</sup> The consumers voiced pervasive issues with consistency, with many consumers specifically mentioning that caption quality was inconsistent between programming, and others citing a variety of issues and associated levels of severity that also imply significant inconsistency.<sup>10</sup>

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<sup>6</sup> Comment of Captioning DRRP, Docket No. 05-231, Oct 15, 2019, <https://www.fcc.gov/ecfs/filing/101630433070> (a full copy of the qualitative full-text responses is included as an appendix.)

<sup>7</sup> PFR at Appendix.

<sup>8</sup> Captioning DRRP at 5.

<sup>9</sup> *Id* at 14.

<sup>10</sup> *Id* at 4-5.

The DRRP analysis breaks down quality issues into different categories in order to illustrate the most common errors in live captions experienced by survey takers.<sup>11</sup> The categories captured how many consumers had issues with completeness, synchronicity and timing, accuracy, placement, consistency, segment variation, and overall quality.<sup>12</sup>

**Completeness.** The DRRP analysis emphasized completeness as a major theme in the qualitative responses and the one mentioned most frequently by consumers.<sup>13</sup> For example, a consumer noted, “When commercial comes up, it cut off captions. I missed the end saying. Very annoying!!!”<sup>14</sup> The categorization of completeness covers a range of issues such as captions being cut-off between segments, captioning not finishing words or sentences leaving the captions unreadable, and captions being completely missing entirely from ad-libbed segments of news broadcasting.<sup>15</sup>

**Synchronicity and Timing.** Synchronicity and timing were the second most mentioned issue among consumers in the qualitative responses.<sup>16</sup> One consumer voiced frustration over the overall difficulty that timing issues can cause in trying to keep up: “[The captions are] always behind. Since topics change rapidly, the captions are for the previous story. I feel that I miss a lot of pertinent information because of the lag time.”<sup>17</sup> The timing category captured an array of issues with captions not matching up with the speaker on screen, captions being ahead or behind the audio track, and captions scrolling too fast for the consumer to read.<sup>18</sup>

**Accuracy.** According to DRRP, another one of the main themes of the HLAA survey was accuracy.<sup>19</sup> A vast majority of commenters mentioned experiencing issues with misspellings,

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<sup>11</sup> *Id* at 5.

<sup>12</sup> *Id.*

<sup>13</sup> *Id* at 6.

<sup>14</sup> *Id* at 7.

<sup>15</sup> *Id* at 6-8.

<sup>16</sup> *Id* at 8.

<sup>17</sup> *Id.*

<sup>18</sup> *Id* at 9.

<sup>19</sup> *Id* at 10.



grammatical errors, or other mismatches to actual spoken words.<sup>20</sup> For example, one commenter noted that “[t]he most incomprehensible parts of a speech are also incomprehensible to the captioning system so are of no help and only confuse me more.”<sup>21</sup> These types of accuracy problems can cause entire captioning segments to be inaccessible, for example by misstating the meaning of the original spoken words.

**Placement.** Caption placement was another major issue in the qualitative responses. Many consumers noted that captions are placed on the screen in a way that covers up important information or speakers’ faces.<sup>22</sup> Caption placement can also cover emergency information or announcements, as one consumer describes: “Sometimes, the Captioning is “underneath “the emergency info. We had a lot of flooding and tornado warnings, sometimes it is difficult to read the Captioning that has a banner of emergency information.”<sup>23</sup>

**Consistency.** Many consumers spoke to the issue of consistency in the qualitative responses.<sup>24</sup> For example, one consumer mentions that “[t]he quality of the captioning varies from station to station and from day to day.”<sup>25</sup> While consistency was mentioned explicitly less frequently than many of the other categorical themes, the wide array of consumer complaints about different quality aspects suggest many consumers experience vastly different issues and quality.

**Segment Variation.** The DRRP analysis also notes that caption quality varies within programming by what segment of the program is being captioned.<sup>26</sup> Weather was mentioned as the most poorly captioned area of news programming.<sup>27</sup> Poorly captioned weather programming could be a danger to those with hearing loss. Without accurate weather captioning, people that are hard of

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<sup>20</sup> *Id.*

<sup>21</sup> *Id.* at 12.

<sup>22</sup> *Id.* at Appendix.

<sup>23</sup> *Id.* at 12.

<sup>24</sup> *Id.* at 13.

<sup>25</sup> *Id.*

<sup>26</sup> *Id.* at 18.

<sup>27</sup> *Id.* at 19.

hearing may be at risk to miss important weather updates and be unable to avoid weather related dangers.

**Overall Quality.** Along with these major categorical themes, the DRRP analysis also captured the overall dissatisfaction of many consumers and their feelings, experiences, and actions following poor caption quality.<sup>28</sup> A majority of survey takers were ultimately unsatisfied with the current state of caption quality.<sup>29</sup> Many survey takers are extremely frustrated with the caption quality and in some cases have given up on watching local live broadcasting altogether.<sup>30</sup> The overall dissatisfaction in the qualitative responses underscores that inconsistent and poor-quality captions negatively affect the lives of consumers who are deaf or hard of hearing.

**B. The hundreds of consumer comments on the record in response to the PFR likewise underscore the significant problems with live caption quality.**

In addition to the HLAA survey, nearly three hundred consumers independently filed comments in response to the PFR.<sup>31</sup> The consumer comments were, by and large, consistent with the observations from the PFR's initial analysis of the HLAA survey's quantitative responses and the DRRP analysis of the qualitative responses and underscored the widespread nature of significant problems with live caption quality.

The vast majority of consumer commenters expressed support for the PFR. Consumers widely underscored that high-quality captions are critical for them to access news programming on equal terms, and the vast majority of commenters expressed serious concerns with the current caption quality standards and supported the PFR's request for the Commission to adopt improved quality metric standards to govern live broadcast captioning.

Analyzing these consumer comments using a methodology similar to DRRP's qualitative analysis of the HLAA study reveals that consumers focus on problems in the same categories:

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<sup>28</sup> *Id* at 13-16.

<sup>29</sup> *Id* at 14.

<sup>30</sup> *Id* at 18.

<sup>31</sup> The comments in this subsection are based on an analysis of consumer comments filed during the initial comment period on the PFR, though it does not cite each comment individually.

completeness, synchronicity and timing, accuracy, placement, and caption consistency. Highlighted examples of consumer issues mirroring the same themes in the DRRP analysis follow.

### **Completeness**

- “[The captioning c]onstantly skips sentences, wrong words etc. Then went on to skip at least a dozen words in the next 5 minutes. The misinformation part is very concerning, let alone the omissions, in case some important info or warnings were to come up.”<sup>32</sup>
- “I do take issue with entire chunks of information missing as this severely impairs the user's ability to understand and appreciate the content of the show. This would apply to live news broadcasts for example.”<sup>33</sup>

### **Synchronicity and Timing**

- “Many times, the captioning of anchors is not in sync with what they are saying. Either goes too fast or is way behind & does not match visual of current or next report.”<sup>34</sup>
- “Yes, closed caption needs to be improved. Speed and accuracy are my biggest issue. I wear hearings aids and use closed caption, and closed caption usually does not keep up with the speech of what is being said on the program.”<sup>35</sup>

### **Accuracy**

- “[I]t’s much more limiting when I cannot watch the news because chunks of the dialogue aren’t even captioned, the captions are so inaccurate as to be misleading, and the lag between the dialogue and the captions is so lengthy that I’ve got no context for who’s saying what . . . .”<sup>36</sup>
- “Automatic closed captioning for LIVE events/news needs a better standard. I find that they have too many typos and misleading information that only hampers my ability to

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<sup>32</sup> Comment of Chris Faso, <https://www.fcc.gov/ecfs/filing/108261448804948>.

<sup>33</sup> Comment of Chandra Federle, <https://www.fcc.gov/ecfs/filing/1082619128221>.

<sup>34</sup> Comment of Sandra Mazur, <https://www.fcc.gov/ecfs/filing/108261839730388>.

<sup>35</sup> Comment of Stephen Slater, <https://www.fcc.gov/ecfs/filing/10825083737407>.

<sup>36</sup> Comment of Michael Meyer, <https://www.fcc.gov/ecfs/filing/10828078616918>.

understand the EMERGENCY! The old way provided by a live person was wayyy better as information was more accurate and clearer. Saving money should not be at the expense of our lives and well-being.”<sup>37</sup>

### **Placement**

- “I think captions should be somewhere where you don’t lose the information that gets posted on the screen and not over anyone’s face.”<sup>38</sup>
- “Sometimes the captioning seems to be placed in the most inconvenient position on the screen.”<sup>39</sup>

### **Consistency**

- “Local coverage is WGAL in Lancaster and CBS, ABC and Fox stations in other cities mainly Harrisburg. WGAL has more captioning then the others but even WGAL live program captioning is poor at best.”<sup>40</sup>
- “Steady and accurate captioning is important to me. Not just entertainment but news. Now it is hit [or] miss. My selection of programs is often guided by the quality of captioning, not content.”<sup>41</sup>

These consumer comments underscore the same overarching point as the HLAA survey: consumers have significant problems with accuracy and completeness of captions, often mentioning captions as being unreadable, garbled, misspelled, and that captions were cut off before segments were completed, as well as problems with timing and other issues. The issues are prevalent and pervasive across consumer experiences, and nearly all consumer commenters stated that caption quality needed to be improved.

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<sup>37</sup> Comment of Alex Fernsler, <https://www.fcc.gov/ecfs/filing/10828234609736>.

<sup>38</sup> Comment of Chris Myers, <https://www.fcc.gov/ecfs/filing/10823248756213>.

<sup>39</sup> Comment of Richard North, <https://www.fcc.gov/ecfs/filing/1082326203245>.

<sup>40</sup> Comment of Russell Green, <https://www.fcc.gov/ecfs/filing/10823297069637>.

<sup>41</sup> Comment of Wayne Silver, <https://www.fcc.gov/ecfs/filing/108253073721068>.

## **II. The record supports the Commission developing quality metrics over the long run.**

The substantial quality problems observed by consumers demonstrate the need for more stringent and uniform quality metrics. Caption providers and ASR companies likewise understand the necessity for these higher standards. For example, AppTek contends that just as other industries use objective and appropriate quality metrics to guarantee performance and progress, the Commission should similarly enact these metrics for the broadcasting industry.<sup>42</sup> Ai-Media has appointed its own independent auditor to create an objective and verifiable check on its technology.<sup>43</sup>

The record underscores that it is unacceptable to allow the continuation of delayed, inaccurate, or nonexistent captions more than twenty years after initial attempts to resolve these problems.<sup>44</sup> Rather than reactively addressing the individual complaints of individual consumers, the Commission must proactively work to mitigate these issues before they even reach the television screen of these consumers who are deaf or hard of hearing.

Therefore, the record supports the implementation of technology-neutral quality metrics. The record is replete with comments explaining the importance of heightened standards that focus on actual results rather than process. Developing metrics will be a difficult but nevertheless necessary task, as the Commission must be equipped to effectively monitor the growing captioning technology market in order to ensure consumers receive quality captions.

Likewise, the widespread exasperation of consumers on the record demonstrates that relying on complaints is not an acceptable mechanism for the Commission and broadcasters to evaluate the quality of live captions. A demonstration of the complaint process demonstrates its inefficiency of this mechanism and the extreme hardship it places on consumers.

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<sup>42</sup> Comment of AppTek at 9, Docket No. 05-231, RM-11065, <https://www.fcc.gov/ecfs/filing/101585639283>.

<sup>43</sup> Comment of Ai-Media Inc. at 2, Docket No. 05-231, RM-11065, <https://www.fcc.gov/ecfs/filing/1015227306581>.

<sup>44</sup> PFR at 2.

**A. The record demonstrates that the current best-practices approach is not results-oriented.**

As the PFR illustrates, the best-practices mechanism does not create an objective, results-focused standard for caption quality, but rather allows caption providers to implement and assess their own rules.<sup>45</sup> The notion that this is ineffective not only stands largely undisputed in the record, but is underscored by qualitative and quantitative responses from hundreds of consumers.<sup>46</sup>

One commenter, the National Association of Broadcasters (NAB), nevertheless suggests that the best-practices system yields results.<sup>47</sup> NAB contends that the current system is already results-oriented because best practices allow for assessment of the output of various techniques.<sup>48</sup> NAB seemingly suggests that the “non-technical” quality dimensions of various techniques can be measured following the use of the best-practices model to ensure that sufficiently high-quality captions ultimately reach consumers.<sup>49</sup> Similarly, the National Cable and Television Association (NCTA) argues that the best-practices approach satisfactorily addresses issues with caption quality, and should therefore not change.<sup>50</sup>

The record overwhelmingly demonstrates that best practices are not results-oriented. As the NAB comment concedes, a best-practices model focuses the Commission’s requirements not on outputs, but on the attributes of a particular captioning technology.<sup>51</sup> Thus, as Ai-Media notes, measurement of caption quality must be decoupled from the method of captioning.<sup>52</sup> Output-based metrics more accurately reflects whether the Commission’s caption quality regulations are actually

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<sup>45</sup> PFR at 7.

<sup>46</sup> See discussion *supra*, Part I.

<sup>47</sup> Comment of National Association of Broadcasters at 10, Docket Nos. 05-231, RM-11065, <https://www.fcc.gov/ecfs/filing/1015002782834>.

<sup>48</sup> *Id.*

<sup>49</sup> *Id.*

<sup>50</sup> Comment of NCTA at 3, Docket Nos. 05-231, RM-11065, <https://www.fcc.gov/ecfs/filing/1015497017048>.

<sup>51</sup> NAB Comment at 10 (arguing that best practices allow industry actors to assess the sufficiency of caption quality based on the captioning method employed).

<sup>52</sup> Ai-Media Comment at 3.

working in practice and not simply whether programmers and captioners are self-reporting that captions are “good enough.”<sup>53</sup> The National Court Reporters Association (NCRA) accurately states that some aspects of the best practices, such as the provision of more advanced material to captioners, may be useful in practice.<sup>54</sup> However, the record demonstrates that these aspects are not alone sufficient to guarantee that any particular method will arrive at a sufficient level of quality.

**B. The challenge of creating technology-neutral metrics cannot overcome the need for the Commission and the industry to engage in the process of doing so.**

While the record overwhelmingly demonstrates the need for substantive metrics to evaluate caption quality, two commenters nevertheless argue that consumers should settle for inferior quality because creating metrics will be too difficult. NAB contends that it will be “unduly burdensome” to implement technology-neutral metrics.<sup>55</sup> NAB argues that metrics could be too stringent to excuse or account for inevitable errors in captioning, and determining what constitutes an error and how to count these errors presents too great of a challenge.<sup>56</sup> NCTA suggests that quality metrics are unfair to impose on broadcasters, particularly for live programming.<sup>57</sup>

NCTA also argues that best practices foster innovation in captions.<sup>58</sup> Meredith Corporation, one of NAB’s members, similarly worries that technology-neutral metrics would be used as an oversight tool that would limit industry innovation.<sup>59</sup>

However strenuous the process for the Commission and members of the broadcast and cable industries to implement technology-neutral standards, the record nevertheless indicates it is necessary to begin the process. As NAB and NCTA suggest, the industry is focused on innovation.

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<sup>53</sup> *Id.*

<sup>54</sup> Comment of NCRA, Docket No. 05-231, RM-11065, <https://www.fcc.gov/ecfs/filing/109160881531069>.

<sup>55</sup> NAB Comment at 2, 9.

<sup>56</sup> *Id.* at 10-11.

<sup>57</sup> NCTA Comment at 4.

<sup>58</sup> *Id.* at 10.

<sup>59</sup> Comment of Meredith Corporation at 1-2, Docket No. 05-231, RM-11065, <https://www.fcc.gov/ecfs/filing/1015571102594>.

The industry is capable of focusing its innovative efforts toward the development of technology-neutral metrics, and NAB and NCTA offer no support for the notion that heightened standards will suppress innovation. Technology-neutral metrics will not compel caption providers to use one particular captioning technique. Rather, setting a higher standard for quality will encourage industry participants to strive for higher quality. As the Arizona Commission for the Deaf and Hard of Hearing accurately suggests, neutral standards will limit negative externalities while continuing to encourage technological advancements.<sup>60</sup>

Additionally, two technology vendors in the captioning industry, Ai-Media Inc and AppTek, suggest the use of Number, Edition, Recognition (NER) as a potential quality threshold that can more effectively monitor caption quality.<sup>61</sup> This evaluation method provides clear rules and standards that score errors depending on their severity.<sup>62</sup> This method is still in development and may or may not ultimately prove to be a viable standard, but its existence shows that the development of metrics is both possible and not overly burdensome. Moreover, the vendors' suggestions bolster the overwhelming support in the record for addressing caption quality sooner rather than later, and effectively offset unsupportable claims that quality metrics are not yet ripe to be considered notwithstanding the vast record of consumer concerns to the contrary.<sup>63</sup>

In an attempt to justify the contention that creating technology-neutral metrics would be overly difficult, industry commenters overstate the irregularity of captioning errors, alleging that they only arising in extreme circumstances. These opponents of the PFR contend that more inflexible standards are unnecessary because the majority of captioning errors are infrequent or inevitable.<sup>64</sup>

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<sup>60</sup> Comment of Arizona Commission for the Deaf and Hard of Hearing at 1-2, Docket No. 05-231, RM-11065, <https://www.fcc.gov/ecfs/filing/1009243012682>.

<sup>61</sup> Ai-Media Comment at 4, Docket No. 05-231, RM-1106, <https://www.fcc.gov/ecfs/filing/1015227306581>. *See also* AppTek Comment at 9, Docket No. 05-231, RM-11065, <https://www.fcc.gov/ecfs/filing/101585639283>.

<sup>62</sup> Ai-Media Comment at 4.

<sup>63</sup> *Compare* Meredith Corporation Comment at 2 *with* discussion *supra*, Part I.

<sup>64</sup> NAB Comment at 10 (stating that errors arise due to failures of internet or equipment, manual errors, unexpected deviations from script, and background noise); *see also* NCTA Comment at 7.



The record, however, overwhelmingly demonstrates that captioning problems are far more pervasive than these commenters suggest, and that inadequate captions do not appear only in extreme situations.<sup>65</sup> Consumers and caption vendors alike recognize the need for neutral metrics to increase overall quality of closed captioning, as the best-practices approach to evaluation provides ample opportunity for errors and inconsistencies, often placing the brunt of the hardship on consumers.<sup>66</sup> For this reason, the Commission must address the concerns of caption vendors and consumers by creating metrics to ensure that captioning errors become the rare exception, rather than what in many cases appears to be the norm.

**C. The Commission's complaint-driven process does not sufficiently address quality problems with live captioning.**

The massive outpouring of consumer concerns on the record stresses the cumbersome and inefficient nature of the current process for filing complaints. Only two commenters argue to the contrary. First, NAB suggests that consumers should continue to serve as a check on the quality of closed captioning by filing complaints with local stations and with the Commission.<sup>67</sup> NAB then contends that the number of consumer complaints has decreased in recent years and therefore that the implementation and alleged success of the Commission's best-practices approach has led consumers to no longer need to file complaints with the Commission or with their local stations.<sup>68</sup> Second, NCTA argues that the complaint process provides an appropriate mechanism to address inevitable problems with live captioning, and that it is the most effective method to monitor industry compliance with quality requirements.<sup>69</sup>

The sheer number of comments on the record alleging actionable problems with captions alone demonstrates that the NAB and NCTA assessments of consumer complaints is incorrect.<sup>70</sup> While

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<sup>65</sup> See discussion *supra*, Part I.

<sup>66</sup> See *e.g.* Ai-Media Comment at 3.

<sup>67</sup> NAB Comment at 5.

<sup>68</sup> *Id.* at 7.

<sup>69</sup> NCTA Comment at 8.

<sup>70</sup> See discussion *supra*, Part I.

NAB and NCTA assume that a causal link between decreased consumer complaints and the alleged success of the best-practices approach, the record reflects that many consumers have simply given up on filing complaints because doing so is often a futile effort. This is no surprise; as the next section explains, the process to file a complaint for a thirty-minute television program can take an extraordinary and undue amount of time and effort.<sup>71</sup>

While retroactively addressing consumer complaints may be a short-term solution for solving captioning problems, it cannot remain as the only mechanism to mitigate repeated and widespread problems with live captioning. The burden should no longer be placed solely on individual consumers to bear the costs of identifying problems that can never be truly remedied because the program is over.

As the advisory group for the Project Television Access correctly articulates, consumers who are deaf and hard of hearing should not and cannot be solely responsible for determining if captions are accurate, synchronic, complete, and correctly placed.<sup>72</sup> Additionally, as AppTek asserts, it is the responsibility of caption providers to ensure caption technologies are a true benefit to consumers who depend on quality captions.<sup>73</sup> As the dissatisfaction on the record indicates, the industry must drive innovation not just in improving the quality of captioning technology, but in monitoring problems and addressing them proactively.

#### **D. Complaining about captioning problems is unduly burdensome for consumers.**

NAB suggests that the Oct. 2 NAB- and NCTA-led meeting between industry groups and consumer groups focused on ways to motivate consumers to file complaints.<sup>74</sup> NAB relatedly asserts “that it is easier than ever for viewers to raise captioning concerns.”<sup>75</sup>

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<sup>71</sup> See discussion *infra*, Part II.D.

<sup>72</sup> Comment of Advisory Group at 1, Docket No. 05-231, RM-11065, <https://www.fcc.gov/ecfs/filing/10917191758670>.

<sup>73</sup> AppTek Comment at 6.

<sup>74</sup> NAB Comment at 5.

<sup>75</sup> Compare NAB Comment at 8 with discussion *supra* Part I.

While the topic of spurring consumer motivation indeed arose during the meeting, we disagree that this stands as the most important or even a significant problem that warrants attention of the Commission, the industry, or consumer groups. As we explained during the meeting—and as the record strongly suggests<sup>76</sup>—neither the Commission’s complaint form nor the complaint contact information provided by broadcast stations are adequate means for assessing or addressing failures of live captions.

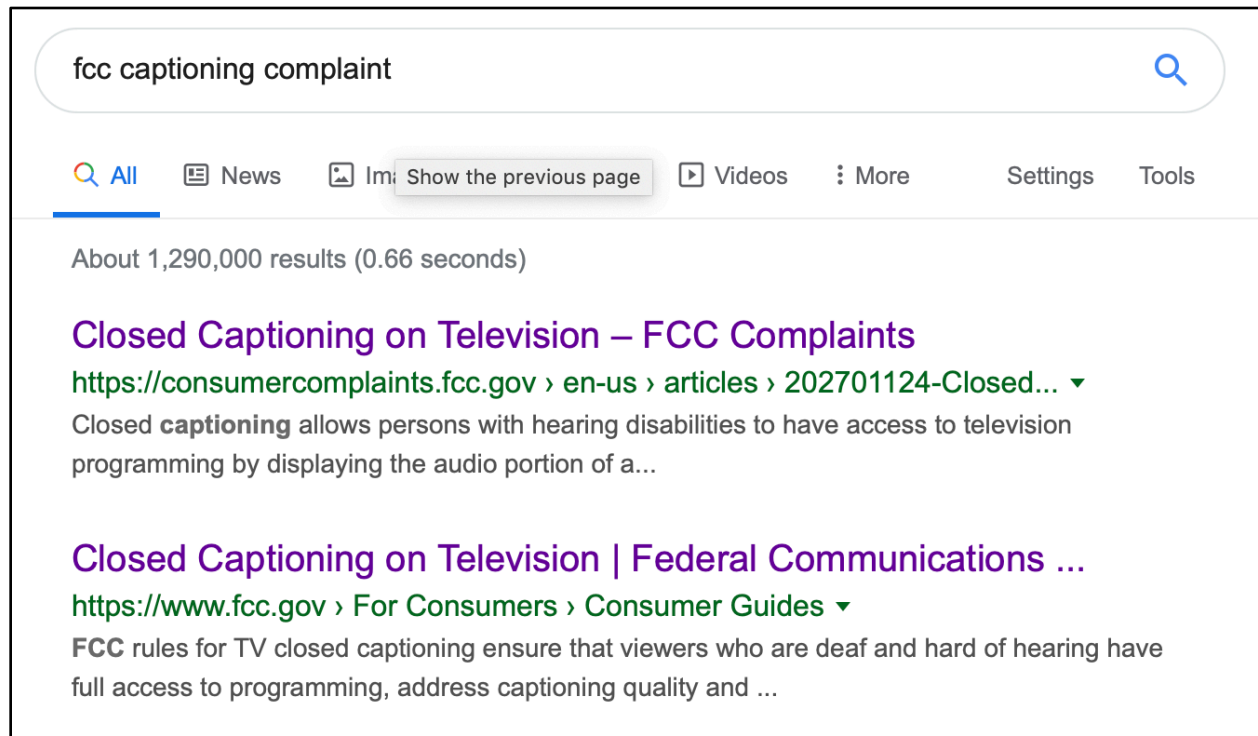
If an average consumer is watching television with live captions and encounters a significant problem, she might file a complaint from her mobile device. The remainder of this section maps out a typical consumer experience, on a smartphone or computer, of finding and filling out the proper complaint form for problems with closed captioning on a live television program.

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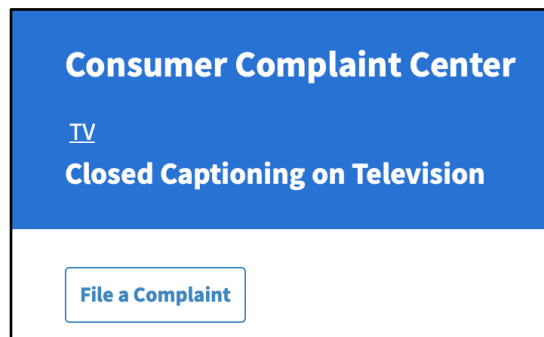
<sup>76</sup> See discussion *supra*, Part I.

A) If the consumer searches “FCC captioning complaint” on Google:

1. The first result takes the consumer to the FCC Consumer Complaint Center.<sup>77</sup>



- a. The first button on the Complaint Center, labeled “File a Complaint,” takes the consumer to a form that is not meant for captioning complaints, but is instead intended for more general TV complaints.<sup>78</sup>



<sup>77</sup> <https://consumercomplaints.fcc.gov/hc/en-us/articles/202701124-Closed-Captioning-on-Television>.

<sup>78</sup> [https://consumercomplaints.fcc.gov/hc/en-us/requests/new?ticket\\_form\\_id=33794](https://consumercomplaints.fcc.gov/hc/en-us/requests/new?ticket_form_id=33794).

- b. The subsequent link, “How to file a complaint,” leads a consumer to a list of several options for what type of complaint a consumer might file.<sup>79</sup>

Closed captioning allows persons with hearing disabilities to have access to television programming by displaying the audio portion of a television program as text on the television screen. Closed captioning provides a critical link to news, entertainment and information for individuals who are deaf or hard-of-hearing. For individuals whose native language is not English, English language captions improve comprehension and fluency. Captions also help improve literacy skills. You can turn on closed captions through your remote control or on-screen menu. (The FCC does not regulate captioning of home videos, DVDs or video games.)


On February 20, 2014, the FCC set new, improved rules for TV closed captioning to ensure that viewers who are deaf and hard of hearing have full access to programming, resolving concerns on captioning quality and providing much-needed guidance to video programming distributors and programmers.

How to file a complaint - <https://consumercomplaints.fcc.gov>


- c. If the consumer selects the first option, “TV,” the website routes the consumer back to the same incorrect form for general TV complaints as above.<sup>80</sup>

### File a complaint


If your complaint is about a telecom billing or service issue, we will serve your complaint on your provider. Your provider has 30 days to send you a response to complaint. We encourage you to contact your provider to resolve your issue prior filing a complaint.



TV



Phone

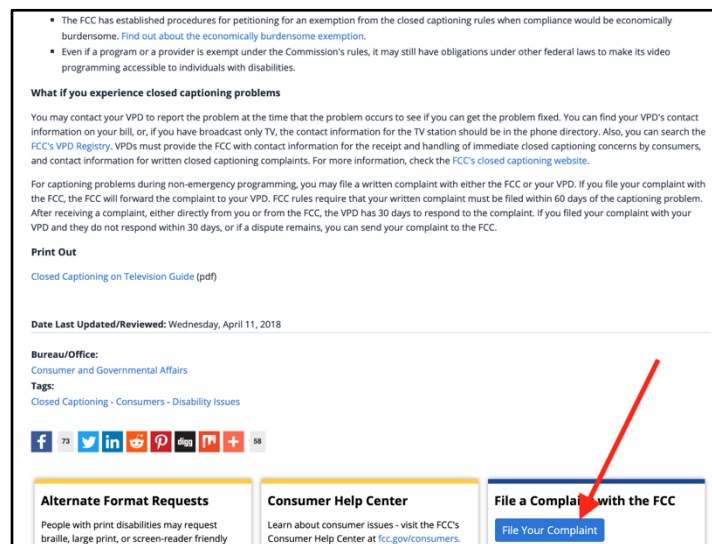


Internet

<sup>79</sup> <https://consumercomplaints.fcc.gov/hc/en-us/articles/202701124-Closed-Captioning-on-Television>.

<sup>80</sup> [https://consumercomplaints.fcc.gov/hc/en-us/requests/new?ticket\\_form\\_id=33794](https://consumercomplaints.fcc.gov/hc/en-us/requests/new?ticket_form_id=33794).

2. If the consumer clicks on the second link as a result of the Google search: “Closed Captioning on Television: Federal Communications Commission,” she arrives at the Commission’s “Closed Captioning on Television” page, which contains a lengthy explanation of the Commission’s quality rules.<sup>81</sup>
- a. Only if the consumer scrolls to the very bottom of the page will she find a “file your complaint” button, which then routes the consumer to a separate Consumer Complaint Center specifically listing Accessibility Complaint Filing Categories.<sup>82</sup>



<sup>81</sup> <https://www.fcc.gov/consumers/guides/closed-captioning-television>.

<sup>82</sup> <https://consumercomplaints.fcc.gov/hc/en-us/articles/204231424-Accessibility-Complaint-Filing-Categories>.

- b. After scrolling past numerous options regarding communications service and equipment to find “Video Programming on Television and Other Equipment,” the consumer can follow yet another link, “Closed Captioning,” which finally takes her to a specific complaint form for accessibility complaints.<sup>83</sup>

**Communications Services and Equipment**  
[Advanced Communications](#)

- Electronic messaging service or equipment (such as text messaging, instant messaging, or e-mail)
- Internet voice chat service or equipment (such as using your computer to talk to a friend)
- Interoperable video conferencing service or equipment

[Hearing Aid Compatibility for Telephones](#)

- Wireless or mobile telephones (such as a cellphone or smartphone)
- Wireline or landline telephones (such as your home phone)

[Internet Browsers Built into Mobile Phones](#)

- Wireless or mobile telephones (such as a cellphone or smartphone)
- Accessibility required for individuals who are blind or visually impaired

[Telephone Service or Equipment](#)

- Wireless or mobile telephone service or equipment (such as a cellphone or smartphone)
- Wireline or landline telephone service or equipment (such as your home phone)
- Cable or Internet phone service or equipment (such as home phone service provided by your Internet service provider)

[Telecommunications Relay Services \(TRS\)](#)

- TRS includes, for example, TTY relay, Internet protocol (IP) relay, video relay service (VRS), captioned telephone service (CTS) and speech-to-speech (STS) relay service.

**Video Programming on Television and Other Equipment**  
[Access to Emergency Information on Television](#)  
[Closed Captioning](#)

- Closed captioning on television (from a television station or subscription television provider, for example, cable, fiber optic or satellite)
- Closed captioning of television programs streamed or downloaded from the Internet (for example, to your computer, tablet, smartphone, television, video game console, or other Internet-enabled device)
- Display of closed captioning (decoder and display requirements for equipment, such as televisions, set-top boxes, and video players)

<sup>83</sup> [https://consumercomplaints.fcc.gov/hc/en-us/requests/new?ticket\\_form\\_id=36040](https://consumercomplaints.fcc.gov/hc/en-us/requests/new?ticket_form_id=36040).

B) If the consumer eventually arrives at the form, she must provide nearly thirty separate pieces of information (asterisks denoting a required field:

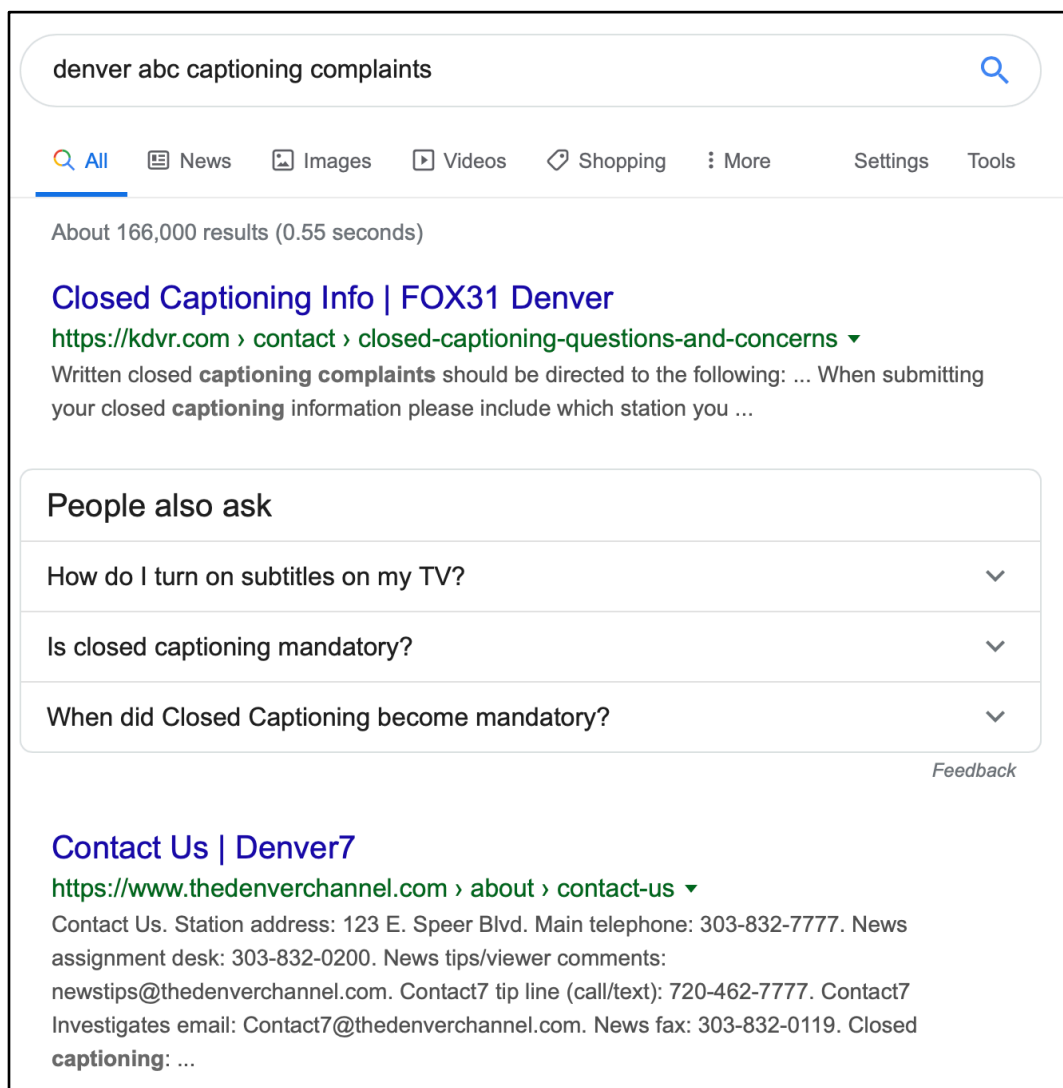
1. \*Email
2. \*Subject
3. \*Description
4. \*Accessibility Issues dropdown with options for “Closed Captioning on TV” or “Closed Captioning over the Internet”
5. \*A dropdown for preferred method of response
6. Name of Company Complaining About
7. City of Company Complaining About
8. State of Company Complaining About
9. Zip Code of Company Complaining About
10. Phone number of Company Complaining About
11. \*Date of Issue/Problem
12. \*Time of Issue/Problem
13. \*Your TV Method dropdown including: Broadcast, Cable, Satellite, Fiber, and Internet
14. \*Name of Subscription Service
15. TV channel
16. Call Sign
17. Network
18. Name of TV program
19. \*City Where Program was Viewed/Heard
20. \*State Where Program was Viewed/Heard
21. \*First Name
22. \*Last Name
23. \*Address
24. \*City
25. \*State
26. \*Zip Code
27. Phone
28. \*Filing on Behalf of Someone dropdown
29. Attachments

It is unclear why consumers cannot access the accessibility complaint forms from the main consumer complaint center and instead must navigate to a separate complaint forum for accessibility



complaints. The form itself has twenty-nine fields, eighteen of which are required. Some of the required fields such as “TV method” and “Name of Subscription Service,” or other fields like “Call Sign” and “Network” are technical and unfamiliar and may be difficult for consumers to answer.

Going directly to a broadcaster’s webpage may yield no better results. For example, a consumer searching “Denver ABC captioning complaints” to lodge a complaint about a problem with captions on the Denver ABC affiliate, Denver7, first yields a result that is not Denver7’s complaint page, but rather the closed captioning information page for the Denver Fox affiliate, FOX31.<sup>84</sup>



<sup>84</sup> <https://kdvr.com/contact/closed-captioning-questions-and-concerns/>.

Of course, if the viewer e-mails the FOX31 contact about her problem, that contact will be unable to assist. And the Denver7 page includes only a phone number and no e-mail address,<sup>85</sup> in explicit violation of Rule 79.1(i)(1).<sup>86</sup>

**Station address:**

123 E. Speer Blvd.  
Denver, CO 80203-3417

**Main telephone:**

303-832-7777

**News assignment desk:**

303-832-0200

**News tips/viewer comments:**

[newstips@thedenverchannel.com](mailto:newstips@thedenverchannel.com)

**Contact7 tip line (call/text):**

720-462-7777

**Contact7 Investigates email:**

[Contact7@thedenverchannel.com](mailto:Contact7@thedenverchannel.com)

**News fax:**

303-832-0119

**Closed captioning:**

303-832-0180

In short, the length and complexity of the Commission's complaint form and the navigation required to successfully reach it, the problems in locating the correct contact information for stations, and the lengthy record of problems with live captioning collectively suggest that consumers often may not file complaints because doing so is difficult, burdensome, and ineffective.

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<sup>85</sup> <https://www.thedenverchannel.com/about/contact-us>.

<sup>86</sup> 47 C.F.R. § 79.1(i)(1) ("Video programming distributors must designate a[n] . . . email address for purposes of receiving and responding immediately to any closed captioning concerns [and] shall include this information on their Web sites . . .").

### **III. The record supports that the Commission should give immediate guidance on the use of ASR techniques to generate live captions.**

The record strongly supports the PFR's conclusion that there are significant problems already beginning to result from the provision of ASR and obstacles to assessing whether and how ASR technologies might meet the quality standards, whether through compliance with human- and ENT-centric best practices or otherwise. Comments from consumers, caption vendors, and ASR providers alike illustrate that it is critical for the Commission to provide specific guidance about ASR.

#### **A. The record highlights that consumers are already experiencing specific problems stemming from ASR-generated live captions.**

The root of the numerous captioning problems many consumers observe may not be self-evident in many cases,<sup>87</sup> and so it is impossible to know the extent to which those problems may be traceable to issues with the use of ASR technology. However, numerous consumers specifically expressed concerns about the use of ASR techniques:

- “The FCC should provide guidance for new captioning systems that use automatic speech recognition, which have the potential to provide captions with improved timing and lower cost but also routinely cause significant accuracy problems.”<sup>88</sup>
- “The technology used in ASR resulting in unintelligible text not only makes the system worthless but is insulting and stressful for the millions of Americans who rely on it to enjoy the programming that the rest of us take for granted. In 2019, with all the quality AI devices in our homes, isn't it time we demanded accuracy from our live captioning of television?”<sup>89</sup>
- “We need the FCC to provide guidance for new captioning systems that use automatic speech recognition, which have the potential to provide captions with improved timing and lower cost but also routinely cause significant accuracy problems.”<sup>90</sup>

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<sup>87</sup> See discussion *supra*, Part I.

<sup>88</sup> Comment of Janet Primomo, <https://www.fcc.gov/ecfs/filing/1091264238357>.

<sup>89</sup> Comment of Kenneth Ray McCamish, <https://www.fcc.gov/ecfs/filing/108270968602156>.

<sup>90</sup> Comment of Michelle Martin, <https://www.fcc.gov/ecfs/filing/108230846504361>.

- “The same standards should apply to all stations who are now moving to AR - IBM Watson captioning. The captioning is lagging, no punctuation or speaker identification, mistranslated and the speed at which it's flying across the screen is many times unreadable. There are many, many stations that have transitioned out live captioners and the captions are literally terrible. If stricter standards are put in place for live captioning, that should include real people as well as the AR captioning that is now being implemented and represented as live.”<sup>91</sup>
- “[A]ll the news shows 2, 4, 5, 7 etc. all seem to be using automated captioning. horrible. sometimes am close to tears trying to understand the captioning now. Perez comes out as Predator. etc etc. I guess they are saving money”<sup>92</sup>

**B. It is unclear how the increasing use of ASR comports with human-and ENT-centric best practices.**

NAB and NCTA nevertheless argue that guidance on ASR should be delayed so as not to restrict development of the technology.<sup>93</sup> Specifically, NAB expresses concerns about special certifications or other new rules for ASR, though it “welcomes a discussion of the prospects for ASR.”<sup>94</sup> NCTA suggests that ASR “will only continue to improve as it is more widely deployed.”<sup>95</sup> While recognizing that ASR is not currently a “full-time turnkey solution,” NCTA contends that ASR should be allowed to develop free of new certifications or oversight rules, and that if and when it is widely deployed the Commission could reevaluate it.<sup>96</sup>

NAB and NCTA misunderstand the PFR’s request for clarification. The Commission’s quality rules are *in effect now*, and any captioning method is required to meet the Commission’s quality standards under Rule 79.1(j),<sup>97</sup> either by satisfying the best practices in Rule 79.1(k) or through some

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<sup>91</sup> Comment of Tracy Bradley, <https://www.fcc.gov/ecfs/filing/108231684012295>.

<sup>92</sup> Comment of Kate Peko, <https://www.fcc.gov/ecfs/filing/108231878229750>.

<sup>93</sup> NAB Comment at 13-14; NCTA Comment at 11.

<sup>94</sup> NAB Comment at 3.

<sup>95</sup> NCTA Comment at 11.

<sup>96</sup> *Id.*

<sup>97</sup> 47 C.F.R. § 79.1(j).

other method.<sup>98</sup> The PFR simply asks that the FCC issue guidance on whether and how ASR technology might comport with the current regulations—whether via the best practices or otherwise.<sup>99</sup>

The record is largely silent as to how those deploying ASR technology purport to comport with the Commission’s best practices for human and ENT captioning. NAB vaguely asserts that best practices do comport with the “steps that ASR users already take to improve caption quality.”<sup>100</sup> But NAB offers no serious explanation as to how.

NAB further contends that a rulemaking regarding ASR would be costly and time-consuming.<sup>101</sup> But the PFR asks for a declaratory ruling or an expedited rulemaking to provide guidance, not a full rulemaking proceeding with a notice and comment period. The record leaves entirely unclear whether or how users of ASR technologies can or purport to comply with the quality standards through the provision of best practices or otherwise.

Finally, NAB suggests that guidance on how the best practices apply to ASR should be taken up by the Disability Advisory Committee (DAC).<sup>102</sup> Respectfully, we disagree that the DAC would prove an effective venue for developing consensus on a topic where NAB has already taken a position on the record that the status quo is more or less acceptable.

While the pace of ASR deployment is sufficiently rapid that consumers are now routinely observing it in the wild, the overall extent of its use is unknown. Regardless, using best practices specifically created for human captioners and ENT will not suffice to address quality concerns with nascent ASR techniques. If only relatively few stations currently use ASR, the Commission should still address how the best practices comport with ASR techniques. If ASR is widely deployed, then the Commission needs rules to ensure quality captions are generated across varying techniques.

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<sup>98</sup> See 47 C.F.R. § 79.1(m)(1)(ii).

<sup>99</sup> PFR at 16.

<sup>100</sup> NAB Comment at 3.

<sup>101</sup> *Id.* at 4.

<sup>102</sup> *Id.* at 14.

**C. Captioning vendors and ASR providers alike support the development of immediate guidance to assess how ASR techniques comport with best practices.**

The need for guidance on ASR is underscored by the concerns of caption vendors. VITAC asserts that ASR should be grouped into two categories: “Supervised ASR” and “Unsupervised ASR.”<sup>103</sup> It claims that live captions produced by “unsupervised” ASR technologies—i.e., the use of ASR with no human oversight—“routinely fail to meet expectations or the Caption Quality Best Practices . . . .”<sup>104</sup> VITAC also acknowledges that live captions by both humans and unsupervised ASR contain missing words, but contends that ASR generated captions leave out more important words such as proper nouns, pronouns, nouns, and verbs.<sup>105</sup> Thus, the record supports that discrepancies exist across ASR techniques, and that some ASR techniques may be incapable of satisfying the quality standards or the best practices.

AppTek also includes a discussion of various improvements to ASR technologies, including punctuation and capitalization improvements.<sup>106</sup> However, the two videos linked as examples show captions in all caps with no punctuation and a significant lag time.<sup>107</sup> These issues again underscore that while ASR technology may be improving, that does not mean it will meet the quality standards or comport with the best practices.

These comments on the record from captioning providers support the notion set forth in the PFR that there are vast differences on how ASR techniques are deployed, such as supervised and unsupervised, and how widely and frequently they are deployed. For these reasons, the Commission must provide immediate guidance on how the varying ASR techniques comport with the best practices. ASR techniques are relatively new and being deployed and tested at apparently increasing rates. If ASR technology develops without specific oversight of quality issues, then caption quality

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<sup>103</sup> Comment of VITAC at 2, Docket No. 05-231, RM-11065 (“VITAC Comment”), <https://www.fcc.gov/ecfs/filing/1007142517975>.

<sup>104</sup> *Id.* at 2.

<sup>105</sup> *Id.* at 3.

<sup>106</sup> AppTek Comment at 8.

<sup>107</sup> *Id.*

will suffer to the detriment of the civil right of deaf and hard of hearing viewers to access video programming on equal terms.

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For the foregoing reasons, the Commission should issue guidance on whether and how ASR techniques comport with the quality standards and best practices. This is an immediate, short-term way to address the deployment of ASR, but the Commission also must develop technology-neutral quality metrics in the long run to ensure the quality of all methods of generating live captions.